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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/534,812	03/24/2000	Shunpei Yamazaki	SEL 169	2789

7590

05/23/2002

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EXAMINER

NGUYEN, KEVIN M

ART UNIT

PAPER NUMBER

2674

DATE MAILED: 05/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/534,812

Applicant(s)

YAMAZAKI

Examiner

Kevin M. Nguyen

Art Unit

2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) 25-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 and 49-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Election/Restrictions***

1. This Office Action is made in response to applicant's RESPONSE TO ELECTION REQUIREMENT AND AMENDMENT, filed on 3/4/2002 (entered into the file wrapper as Paper No. 7).

2. Applicant's election without traverse of species II, as illustrated in figure 22 and species VII as illustrated in Figure 27, in Paper No. 7 is acknowledged.

3. During a telephone conversation with Mark Murphy on 5/14/2002 a provisional election was made without traverse to prosecute the invention of claims 1-30 and 49-54. Affirmation of this election must be made by applicant in replying to this Office action. Claims 25-42 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected species I, III-VI, VIII-XV.

Applicant indicated that claims 1-30 and 49-54 are readable on the elected species II and species VII. However, the Examiner does not believe claims 1-30 and 49-54 readable on the elected species since these claims recite limitations not readable on the elected species II and species VII, e.g., claims 25-30 recite a limitation "a front projector" of species IV, claims 31-36 recite a limitation "a single plate type projector" of species III, claims 37-42 recite a limitation "a goggle type display" species VI, but are not found in species II and species VII.

4. The requirement is still deemed proper and is therefore made FINAL.

5. Applicants elected species II and species VII with claims 1-24 and 49-54 are entered for examination. An action on the RESPONSE TO ELECTION REQUIREMENT follows.

***Information Disclosure Statement***

6. The information disclosure statement filed 2/8/2002 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

***Specification***

7. The disclosure is objected to because of the following informalities: rationgray scale (page 8, line 6). Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 2, 4 and 6 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specification only discloses the voltage gray scale is first conducted to conduct and next the time ratio gray scale or one is conducted immediately before the other (see page 8, lines 20-21). However, the

application does not disclose expressly how performing voltage gray scale method after time ratio gray scale, or one immediately after the other, so as enable the examiner understanding the claimed invention.

Claims 1-6, which simultaneously claims both statutory classes (wherein a liquid crystal display device is characterized as, ... conducting voltage grayscale method and time ratio gray scale...) is indefinite under 112/2d (In Ex Parte Lyell 17 USPQ2d 1548 (Bd.PA&I 1990)).

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**11. Claims 1, 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al (US 6,020,869) in view of Nakai et al (US 6,072,454).**

12. As to claims 1 and 2, Sasaki et al teaches an active matrix liquid crystal display device (col. 10, lines 40-43) having a x-driver 101, y-driver 201, an opposing substrate and electrode (figure 1), a grayscale signal circuit 301 controls 6 bit input to a 4 bit (col. 10, lines 23-25), and  $\frac{1}{4}$ ,  $\frac{2}{4}$ ,  $\frac{3}{4}$ , and  $\frac{4}{4}$ ,  $\frac{1}{6}$ ,  $\frac{2}{6}$ , ...,  $\frac{6}{6}$  (time ratio gray scale as claimed, figure 5, col. 12, lines 26-50), as satisfying the condition  $(m-n) = (6-4)$  bit as information for time ration gray scale, and  $m > n$  ( $6 > 4$ ).

Sasaki et al fails to teach optically compensated mode (OCB mode). However, Nakai et al teaches an OCB mode liquid crystal may also use (col. 16, lines 66-67). It

would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate an OCB mode liquid crystal taught by Nakai et al for the twist nematic TN liquid crystal of Sasaki et al because a liquid display method is also arbitrary, and may be any type to LCD (col. 16, line 67 to col. 17, line 9 of Nakai et al).

**13. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al (US 6,020,869) in view of Nakai et al (US 6,072,454), and further in view of Mase et al (US 5,337,171).**

As to claims 19 and 20, Sasaki et al and Nakai et al teach all of the claimed limitations of claims 1 and 2, except for a rear projector 801 having three liquid crystal display devices. However, Mase et al teaches a rear projector having three liquid crystal display devices 601 (figure 31, col. 20, lines 36-39). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the LCD of Sasaki et al's and Nakai et al's in the rear projector of Mase et al's because this would be applied to any type of the rear projector (col. 4, lines 49-54 of Mase et al).

**14. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al (US 6,020,869) in view of Nakai et al (US 6,072,454), and further in view of Ito et al (US 5,959,603).**

15. As to claims 3-6, Sasaki et al teaches an active matrix liquid crystal display device (col. 10, lines 40-43) having a x-driver 101, y-driver 201, an opposing substrate and electrode (figure 1), a grayscale signal circuit 301 controls 6 bit input to a 4 bit (col. 10, lines 23-25), and  $\frac{1}{4}$ ,  $\frac{2}{4}$ ,  $\frac{3}{4}$ , and  $\frac{4}{4}$ ,  $\frac{1}{6}$ ,  $\frac{2}{6}$ , ...,  $\frac{6}{6}$  (time ratio gray scale as claimed, figure 5, col. 12, lines 26-50), as satisfying the condition  $(m-n) = (6-4)$  bit as

information for time ration gray scale, and  $m > n$  ( $6 > 4$ ), Figure 5 taught by Sasaki et al shows a gray level voltage in accordance with a logic gray level used four frame period control ( $2^{6-4}$  subframe), inherently applying voltage which makes an orientation of liquid crystal to a bend orientation on starting display of the four subframe.

Sasaki et al fails to teach optically compensated mode (OCB mode). However, Nakai et al teaches an OCB mode liquid crystal may also use (col. 16, lines 66-67). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate an OCB mode liquid crystal taught by Nakai et al for the twist nematic mode TN liquid crystal of Sasaki et al because a liquid display method is also arbitrary, and may be any type to LCD (col. 16, line 67 to col. 17, line 9 of Nakai et al).

Therefore, Sasaki et al and Nakai et al teach all of the claimed limitations of claims 3-6, except for forming an image for one frame image comprising  $2^{m-n}$  subframes by performing voltage gray scale method. However, Ito et al teaches voltage waveforms applying in according with gray scale having one frame period  $F$ , one frame period  $F$  divides into four subframe  $t_1$ ,  $t_2$ ,  $t_3$ , and  $t_4$  (see abstract). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the waveforms taught by Ito et al for the TFT-LCD of Sasaki et al and Nakai et al in this order to drive the TFT-LCD.

**16. Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al (US 6,020,869) in view of Nakai et al (US 6,072,454) in view of Ito et al, and further in view of Mase et al.**

As to claims 21-24, Sasaki et al, Nakai et al, and Ito et al teach all of the claimed limitations of claims 3-6, except for a rear projector 801 having three liquid crystal display devices. However, Mase et al teaches a rear projector having three liquid crystal display devices 601 (figure 31, col. 20, lines 36-39). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the LCD of Sasaki et al's, Nakai et al's, and Ito et al's in the rear projector of Mase et al's because this would be applied to any type of the rear projector (col. 4, lines 49-54 of Mase et al).

**17. Claims 7, 8, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al in view of Nakai et al as applied to claims 1 and 2 above, and further in view of Ishida et al (US 6,069,609).**

18. As to claims 7, 8, 13 and 14, Sasaki et al and Nakai et al teach all of the claimed limitation of claims 1 and 2, except for the positive number  $m$  is 10 and the positive number  $n$  is 2. However, Ishida et al teaches a gray scale circuit having a  $n$  bit input data signal and  $m$  bit output data signal (figure 26) with  $m < n$  (col. 2, line 44). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the  $n$  bit input and  $m$  bit output taught by Ishida et al for the gray scale circuit 301 of Sasaki in order to assign  $m$  is 10 and  $n$  is 2.

**19. Claims 9-12 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al in view of Nakai et al in view of Ito et al as applied to claims 3-6 above, and further in view of Ishida et al (US 6,069,609).**

20. As to claims 9-12 and 15-18, Sasaki et al, Nakai et al, and Ito et al teach all of the claimed limitation of claims 3-6, except for the positive number  $m$  is 12 and the

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positive number  $n$  is 4. However, Ishida et al teaches a gray scale circuit having a  $n$  bit input data signal and  $m$  bit output data signal (figure 26) with  $m < n$  (col. 2, line 44). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the  $n$  bit input and  $m$  bit output taught by Ishida et al for the gray scale circuit 301 of Sasaki in order to assign  $m$  is 12 and  $n$  is 4.

**21. Claims 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al in view of Nakai et al as applied to claims 1 and 2 above, and further in view of Kusano et al (US 5,677,704).**

22. As to claims 49 and 50, Sasaki et al and Nakai et al teach all of the claimed limitations of claims 1 and 2, except for a notebook type personal computer. However, Kusano et al teaches a liquid crystal display device being applied to the laptop computer 10 (figure 1, col. 5, lines 16-18). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the laptop computer 10 taught by Kusano et al for the LCD of Sasaki et al because a laptop computer 10 is applicable to the invention.

**23. Claims 51-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al in view of Nakai et al in view of Ito et al as applied to claims 3-6 above, and further in view of Kusano et al.**

24. As to claims 51-54, Sasaki et al, Nakai et al and Ito et al teach all of the claimed limitations of claims 3-6, except for a notebook type personal computer. However, Kusano et al teaches a liquid crystal display device being applied to the laptop computer 10 (figure 1, col. 5, lines 16-18). It would have been obvious to a person of ordinary skill

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in the art at the time of the invention to incorporate the laptop computer 10 taught by Kusano et al for the LCD of Sasaki et al because a laptop computer 10 is applicable to the invention.

***Conclusion***

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Kevin M. Nguyen** whose telephone number is **703-305-6209**. The examiner can normally be reached on MON-FRI from 9:00-5:00 with alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard A Hjerpe** can be reached on **703-305-4709**.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

**(703) 872-9314 (for Technology Center 2600 only)**


Hand-delivered response should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

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Examiner  
Art Unit 2674

  
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PRIMARY EXAMINER